DETAILED ACTION

Status of the Claims

1. This action is in response to papers filed 9 February 2010 in which claim 1 was amended, no claims were canceled, and new claim 32 was added. All of the amendments have been thoroughly reviewed and entered.

The previous rejections under 35 U.S.C. 103(a) not reiterated below are withdrawn in view of the amendments. Applicant's arguments have been thoroughly reviewed and are addressed following the rejections necessitated by the amendments.

Claims 1-2, 4, 26-27, 29, and 31-32 are under prosecution.

2. This action is non-final in view of the rejections under 35 U.S.C. 112, first paragraph presented below.

Claim Interpretation

3. Claim 1 has been amended to recite "tetramethyl orthosilicate (TMOS) and methyltrimethoxysillane (MTMS)" in lines 10-11 and also recites "polyglycerylsilicate (PGS), 3-glycidoxypropyltrimethoxysilane (GPTMOS), (N-triethoxysilylpropyl)-O-polyethylene oxide urethane (PEOU), glycerol, and polyethylene glycol (PEG)" in lines 14-13. Support for this amendment is found on page 7 of the instant specification. A review of the specification finds no further definition of the acronyms present in the claim. In addition, page 7 of the claim specifically defines polyethylene glycol and "PEG" to have a molecular weight "in the range of 400 to 10,000." Therefore, the

acronyms are limited to the compounds specifically described on page 7 of the specification, and the recitations of polyethylene glycol and "PEG" are limited to PEG compounds having a molecular weight in the range of 400 to 10,000.

Claim Rejections - 35 USC § 112, First Paragraph

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-2, 4, 26-27, 29, and 31-32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. This is a new matter rejection. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

A. Claim 1, upon which claims 2, 4, 26-27, 29, and 31-32 depend, recites gel spots that "have a hemispherical shape of three-dimensional structure" in line 4 of the claim. Applicant cites the Examples (particularly Example 2) and Figure 2B of the specification for support of this amendment. While Example 3 of the instant specification discusses spots having "most excellent three dimensional structure," a review of the specification yields no teaching of spots having "hemispherical" shape or structure, nor any other specific three dimensional shape or structure. While Figure 2B shows a roughly circular spot, the Figure shows the spot form above, and includes no

details about the relative height or the degree of curvature of the spot above the substrate. Therefore, the recitation of spots that have a "hemispherical" shape constitutes new matter.

B. Claim 1, upon which claims 2, 4, 26-27, 29, and 31-32 depend, was previously amended on 12 May 2009 to recite gel spots that are "glassy gel" (line 8 of claim 1). Applicant previously cited Figure 2A and lines 9-18 of page 7 of the specification for support of the amendment. However, a review of the specification yields no teaching of "glassy gel" spots. Figure 2a is described on page 12 of the specification as a spot from the prior art biochip of Rupcich et al, and thus does not refer to the instantly claimed invention. Page 7 of the specification does not discuss "glassy gel" spots. Therefore, the recitation of "glassy gel" spots constitutes new matter.

C. New claim 32 states that "the tetramethyl orthosilicate (TMSO) is present in an amount that is larger than an amount of methyltrimethoxysillane (MTMS)." While Table 1 of the instant specification (cited by Applicant) supports TMOS/MTMS ratios of 2:1 (composition 3), 2.04:1 (compositions 4-6), and 3.33:1 (composition 7), a review of the specification yields no teaching of the more broadly claimed "larger" amounts, which encompasses a vast range of ratios not present in the specification (e.g., 10:1, 20:1, 100:1, etc). Thus, because the limitation encompasses a much broader range than that supported by the specification as filed, the broadly claimed limitation that "the tetramethyl orthosilicate (TMSO) is present in an amount that is larger than an amount of methyltrimethoxysillane (MTMS)" constitutes new matter.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-2, 26-27, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (Biotechnology and Bioengineering, vol. 73, pages 331-337 (5 June 2001)) in view of Avnir et al (U.S. Patent No. 5,292,801, issued 8 March 1994) in view of Simon et al (U.S. Patent No. 5,569,607, issued 29 October 1996) and, as applied to claim 32, as evidenced by the 2007-2008 Aldrich Catalog (pages 2307 and 2426).

Regarding claim 1, Kim et al teach a biochip in the form of Figure 1, which shows a biochip comprising a chip substrate in the form of a polyvinyl acetate coated glass

slide having gel spots in the from of sol-gel microstructures in strips (i.e., spots) thereon. The sol-gel spots are immobilized on the slide because the spots are retained by the polyvinyl acetate (i.e., PVAc) coating (page 336, column 1, last full paragraph); and the polyvinyl acetate coating has a molecular weight of 130,000 (page 332, "Materials" section) and is dissolved in methylene chloride (page 33, column 1). The gel spots have pores therein in the form of microchannels (page 332, column 1, first full paragraph), and active proteins, which are biomaterials, are contained within the sol-gel spots (Figure 1). The gel spots are formed by gelation of tetramethyl orthosilicate (i.e., TMOS; page 332, "Materials), methyltrimethoxysillane (i.e., MTMS, referred to as MTrMOS by Kim et al; page 332, "Materials), and an additive (page 333, first full paragraph). The biomaterials have a free orientation without being immobilized because they are entrapped within the pores (i.e., microchannel network; page 332, column 1, first full paragraph and page 333, column 1). Because the biomaterials are entrapped within the gel, there is not covalent bond to the gel. The gel spots are formed by the gelation of a sol mixture on the substrate (page 333, columns 1-2). Kim et al also teach the gel spots are integrated in an amount of up to 1000 spots/cm2; namely, Figure 4 shows 5 spots of gel in an area approximately 1000 microns (0.1 cm) by about 700 microns (0.07 cm), based on the 100 micron bar in the Figure. The spot density is therefore (5 spots)/(0.1 cm)x(0.07 cm) = approximately 714 spots/cm2.

While Kim et al teach the spots are formed via sonicating TMOS, MTrMOS (i.e., MTMS) and an additive to produce PDMS (page 333, first full paragraph), and while Kim et al teach the use of polyethylene glycol, in the form of PDMS polyethylene glycol

(page 332, "Materials"), Kim et al do not teach the gels spots are glassy gels spots or that the additive is polyethylene glycol.

However, Avnir et al teach a biochip in the form of a support having spots (column 5, lines 55-60), wherein the spots are glassy sol-gel spots having biomaterials doped therein (Abstract). The biomaterials are trapped in the glassy sol gel without covalent modification (Abstract and column 4, lines 60-67); thus, there is no covalent bond and the biomaterials have a free orientation. The gels spots also comprise the silicate tetramethoxysilane (TMOS) and an additive in the form of PEG having a molecular weight of 400 (column 7, lines 35-55). Avnir et al also teach that sol gel glass is a product "obtained by a polymerization of metal alkoxide mixtures which bear both hydrolyzable and nonhydrolyzable substituents (column 1, lines 60-65)" and that the gel spots have the advantage of being useful in quantitative analysis (column 1, lines 10-30). Thus, Avnir et al teaches the known technique of providing glassy gels spots.

While neither Kim et an nor Avnir et al explicitly teach the spots are spherical, Avnir et al do teach in lines 20-30 of column 3 that three dimensional shapes (e.g., rods, discs, cubes), and that the glassy gel spots are "in any shape." The courts have found that changes in shape are obvious (*In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966)). Thus, spherical three dimensional shape of the spots of the instant claim is an obvious variant of the three dimensional spots Kim et al in view of Avnir et al. See MPEP 2144.04 [R-6] IV B.

It would therefore have been obvious to a person of ordinary skill in the art at the time the claimed invention was made to have modified Kim et al, which teaches a

biochip comprising gel spots of PDMS formed by polymerization of TMOS, which is a metal (i.e., silicon) alkoxide having hydrolyzable methoxy substituents, MTMS, which is a metal (i.e., silicon) alkoxide having nonhydrolyzable methyl substituents, and an additive, and which also suggests using PDMS having polyethylene glycol, so that the gel spots are the three dimensional glassy gel spots made from TMOS and PEG as taught by Avnir et al to arrive at the instantly claimed biochip with a reasonable expectation of success. The ordinary artisan would have been motivated to make the modification because said modification would have resulted in a biochip comprising spots having the added advantage of being useful in quantitative analysis as explicitly taught by Avnir et al (column 1, lines 10-30). In addition, it would have been obvious to the ordinary artisan that the known technique of using the glassy three dimensional gel spots of Avnir et al could have been applied to the biochip of Kim et al with predictable results because the known technique of using the glassy three dimensional gel spots of Avnir et al predictably results in spots useful for analyte binding reactions.

While Avnir et al teach the glassy spots are supported on an optical support (column 5, lines 55-60), neither Kim et al nor Avnir et al teach the substrate is a polycarbonate substrate.

However, Simon et al teach a slide substrate made of polycarbonate, which has the added advantage of being made by plastic injection molding, thereby producing a precision slide by simple manufacturing techniques (column 1, line 59-column 2, line 10). Thus, Simon et al teach the known technique of using a polycarbonate substrate.

It would therefore have been obvious to a person of ordinary skill in the art at the time the claimed invention was made to have modified the chip substrate as taught by Kim et al in view of Avnir et al by using the polycarbonate substrate of Simon et al as the chip substrate to arrive at the instantly claimed invention with a reasonable expectation of success. The ordinary artisan would have been motivated to make the modification because said modification would have resulted in a chip substrate having the added advantage of having a precision slide made by simple manufacturing techniques as explicitly taught by Simon et al (column 1, line 59-column 2, line 10). In addition, it would have been obvious to the ordinary artisan that the known technique of using the polycarbonate substrate of Simon et al could have been used as the chip substrate of Kim et al in view of Avnir et al with predictable results because the polycarbonate substrate of Simon et al predictably results in a substrate useful for evaluation of specimen liquids.

Regarding claim 2, the biochip of claim 1 is discussed above. Kim et al teach the chip is used as a protein chip; namely proteins are entrapped in the chip (page 333, column 1). Avnir et al also teach the biochip is used as a protein chip (i.e., has antibodies immobilized thereon; column 10, lines 10-50). Thus, modification of the biochip of Kim et al in view of Simon et al with the teachings of Avnir et al results in a biochip used as a protein chip.

In addition, it is noted that the courts have held that "while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than

function." *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997). In addition, "[A]pparatus claims cover what a device *is*, not what a device *does*." *Hewlett-Packard Co. v. Bausch &Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original). Therefore, the various uses recited in claim 2 (e.g., use as a protein chip) fail to define additional structural elements to the device of independent claim 1. Because the prior art teaches the structural elements of the claim, the claim 2 is obvious over the prior art. See MPEP § 2114.

Regarding claims 26-27, the biochip of claim 1 is discussed above. Kim et al teach the biochip of claim 1, wherein the biomaterials are IgG (page 333, column 1), which are antigens to anti-human polyvalent IgG (i.e., claim 27) and are proteins (i.e., claim 28). In addition, Avnir et al also teach the biochip has antigens immobilized thereon; namely, anti-IL-2r, which is a protein that is an antigen to IL-2R, is immobilized in the spots (column 10, lines 10-50). Thus, modification of the biochip of Kim et al in view of Simon et al with the teachings of Avnir et al results in a biochip having antigenic proteins immobilized therein.

It is noted that the broadly claimed "antigens or antibodies for infections disease diagnosis" of claim 27 does not necessarily require the antigens to be "for infections disease diagnosis" due to the placement of the word "or" in the recitation.

Regarding claim 32, the biochip of claim 1 is discussed above. Kim et al also teach the TMOS is present in a larger amount that MTMS; namely, Kim et al teach that 0.3 mL each of TMOS and MTMS are used (page 333, first full paragraph). Page 2307 of the Aldrich catalog teaches TMOS has a density of is 1.023 g/mL; thus, the amount

by weight of TMOS is 0.3069 g. Page 2426 of the Aldrich catalog teaches MTMS (i.e., trimethoxymethylsilane) has a density of is 0.955 g/mL; thus, the amount by weight of MTMS is 0.2865 g, which is less than the amount of TMOS. A review of the specification yields no limiting definition of how the amount is larger (e.g., volume, weight, moles). Thus, the claim has been given the broadest reasonable interpretation consistent with the teachings of the specification regarding a "larger" amount (*In re Hyatt*, 211 F.3d1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000) (see MPEP 2111 [R-1]).

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (Biotechnology and Bioengineering, vol. 73, pages 331-337 (5 June 2001)) in view of Avnir et al (U.S. Patent No. 5,292,801, issued 8 March 1994) in view of Simon et al (U.S. Patent No. 5,569,607, issued 29 October 1996) as applied to claim 1 above, and further in view of Malhorta (U.S. Patent No. 5,624,743, issued 29 April 1997).

Regarding claim 4, the biochip of claim 1 is discussed above in Section 8.

While Kim et al teach the polyvinyl acetate solution is in methylene chloride (page 333, first paragraph), neither Kim et al, Avnir et al, nor Simon et al teach the solvent is 5-20% by weight.

However, Malhorta teaches polyvinyl acetate solutions in about 10 to about 30 percent by weight (column 7, lines 40-60), which includes the claimed value of 20% by weight. Thus, Malhorta teaches the known technique of using a polyvinyl acetate solution having methylene chloride in 20% by weight.

It would therefore have been obvious to a person of ordinary skill in the art at the time the claimed invention was made to have modified the chip substrate having a coating solution of polyvinyl acetate in methylene chloride as taught by Kim et al in view of Avnir et al and Simon et al so that the coating solution is a polyvinyl acetate solution having methylene chloride in 20% by weight as taught by Malhorta to arrive at the instantly claimed invention with a reasonable expectation of success. It would have been obvious to the ordinary artisan that the known technique of using the polyvinyl acetate solution having methylene chloride in 20% by weight as taught by Malhorta could have been used as the coating solution in the chip substrate of Kim et al in view of Avnir et al and Simon et al with predictable results because the known technique of using the polyvinyl acetate solution having methylene chloride in 20% by weight as taught by Malhorta predictably results in a useful coating solution concentration.

10. Claims 27 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (Biotechnology and Bioengineering, vol. 73, pages 331-337 (5 June 2001)) in view of Avnir et al (U.S. Patent No. 5,292,801, issued 8 March 1994) in view of Simon et al (U.S. Patent No. 5,569,607, issued 29 October 1996) as applied to claims 1 and 26 above, and further in view of Croxson (U.S. Patent No. 5,108,891, issued 28 April 1992).

It is noted that while claim 27 has been rejected under 35 U.S.C 103(a) as described above in Section 8, the claim is also obvious using the interpretation outlined below.

Regarding claims 27 and 29, the biochip of claims 1 and 26 is discussed above in Section 8.

Kim et al teach the immobilized biomaterial IgG (page 333, column 1), which is a protein in the form of an antibody. In addition, Avnir et al also teach the biochip has anti-IL-2r, which is a protein in the form of an antibody that is an antigen to the antibody IL-2R, immobilized in the spots (column 10, lines 10-50). However, neither Kim et al, Avnir et al, nor Simon et al specifically teach the protein is the antibody HIV p24 (i.e., claims 27 and 29).

However, Croxson teaches the binding of molecules to protein HIV p24 (Abstract), wherein HIV p24 has the added advantage of being an indicator of the progression of HIV to AIDS (column 1, lines 40-67). Thus, Croxson teaches the known technique of binding molecules to HIV p24.

It would therefore have been obvious to a person of ordinary skill in the art at the time the claimed invention was made to have modified the biochip as taught by Kim et al in view of Avnir et al and Simon et al so that the immobilized protein biomaterial on the biochip is the HIV p24 protein of Croxson to arrive at the instantly claimed invention with a reasonable expectation of success. The ordinary artisan would have been motivated to make the modification because said modification would have resulted in a biochip having the added advantage of allowing the assays performed with the biochip to indicate the progression of HIV to AIDS as explicitly taught by Croxson (column 1, lines 40-67). In addition, it would have been obvious to the ordinary artisan that the known technique of using the HIV p24 of Croxson could have been used as the

biomaterial in the biochip of Kim et al in view of Avnir et al and Simon et al with predictable results because the HIV p24 of Croxson predictably results in a substrate useful for evaluation of the HIV progression in a patient.

11. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (Biotechnology and Bioengineering, vol. 73, pages 331-337 (5 June 2001)) in view of Avnir et al (U.S. Patent No. 5,292,801, issued 8 March 1994) in view of Simon et al (U.S. Patent No. 5,569,607, issued 29 October 1996) as applied to claims 1 and 26 above, and further in view of Maracas et al (U.S. Patent No. 5,725,788, issue 10 March 1998).

Regarding claim 31, the biochip of claim 1 is discussed above in Section 8.

Kim et al teach the spots are formed via patterning using a stamp (Figure 1); however, neither Kim et al, Avnir et al, nor Simon et al specifically teach a spot diameter of about 100-500 microns.

However, Maracas et al teach biochips in the form of arrays of monolayer features (i.e., spots; Abstract), wherein the array is produced using a polydimethylsiloxane (i.e., PDMS) stamp producing circular spots of 0.1-1000 microns (Figure 1 and column 3, lines 35-55), which encompasses the claimed range of 100-500 microns. Maracas et al also teach the stamp has the added advantage of producing patterns quickly, easily, and reproducibly with low cost and low maintenance (column 1, lines 40-50). Thus, Maracas et al teach the known technique of producing spots having diameters in the range of 100-500 microns.

It would therefore have been obvious to a person of ordinary skill in the art at the time the claimed invention was made to have modified the biochip comprising gel spots created with a PDMS stamp as taught by Kim et al in view of Avnir et an and Simon et al by using the PDMS stamp producing the 100-500 micron diameter gel spots as taught by Maracas et al to arrive at the instantly claimed invention with a reasonable expectation of success. The ordinary artisan would have been motivated to make the modification because said modification would have resulted in a chip substrate having the added advantage of using a stamp that produces patterns quickly, easily, and reproducibly with low cost and low maintenance as explicitly taught by Maracas et al (column 1, lines 40-50). In addition, it would have been obvious to the ordinary artisan that the known technique of making the spot diameters of Maracas et al could have been used to form the chip substrate of Kim et al in view of Avnir et al and Simon et al with predictable results because the known technique of making the spot diameters of Maracas et al predictably results in a spot sizes useful for arrays

Response to Arguments

12. Applicant's arguments filed 9 February 2010 (hereafter the "Remarks") have been fully considered but they are not persuasive for the reasons discussed below.

A. Applicant argues on page 9 of the Remarks that the disclosure implicitly discloses a gel spot having a "hemispherical" three-dimensional shape.

However, as noted above, while Example 3 of the instant specification discusses spots having "most excellent three dimensional structure," a review of the specification

yields no teaching of spots having "hemispherical" shape or structure, nor any other specific three dimensional shape or structure. While Figure 2B shows a roughly circular spot, the Figure shows the spot form above, and includes no details about the relative height or the degree of curvature of the spot above the substrate. Therefore, the recitation of spots that have a "hemispherical" shape constitutes new matter.

In addition, it is noted that the term "most excellent" does not support any shape or structure whatsoever, as it is a relative term having no art-accepted definition.

B. Applicant argues on pages 11-12 of the Remarks that Kim et al do not teach glassy gel spots having TMOS, MTMS, and PEG.

However, Avnir et al also teach that sol gel glass is a product "obtained by a polymerization of metal alkoxide mixtures which bear both hydrolyzable and nonhydrolyzable substituents (column 1, lines 60-65)."

Thus, the teaching of Kim et al that the PDMS spots are formed via sonication of TMOS, which is a metal (i.e., silicon) alkoxide having hydrolyzable methoxy substituents, MTMS, which is a metal (i.e., silicon) alkoxide having nonhydrolyzable methyl substituents, and an additive, and which also suggests using PDMS having polyethylene glycol, utilizes a protocol with is at least substantially similar to, if not wholly identical to, the procedure that Avnir et al state produces glassy gels. Thus, the production of glassy gels is an obvious variant of Kim et al in view of the teachings of Avnir et al.

C. Applicant argues on page 12 of the Remarks that the claimed combination of feature is absent from the cited art.

However, as noted above, Kim et al teach the PDMS spots are formed via sonication of TMOS, which is a metal (i.e., silicon) alkoxide having hydrolyzable methoxy substituents, MTMS, which is a metal (i.e., silicon) alkoxide having nonhydrolyzable methyl substituents, and an additive, and also suggest using PDMS having polyethylene glycol (i.e., PEG).

Avnir et al teach formation of glassy gels made of TMOS and PEG by a polymerization of metal alkoxide mixtures which bear both hydrolyzable and nonhydrolyzable substituents.

Thus, the combination of the cited prior art teaches all of the claimed limitations, and provides a reasonable expectation of success because the conditions described by Avnir et al for making glassy gels are nearly identical to, and thus obviously related to, the conditions described by Kim et al.

D. Applicant argues on page 12 of the Remarks that it is impossible to achieve the unexpected results using the mixture of Avnir et al.

However, it is noted that the rejection is based on the combination of Kim et al and Avnir et al. Thus, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In addition, MPEP 716.01(c) makes clear that "[t]he arguments of counsel cannot take the place of evidence in the record" (*In re Schulze*, 346 F.2d 600, 602, 145 USPQ

716, 718 (CCPA 1965)). Thus, counsel's mere arguments that it is impossible to achieve the unexpected results using the mixture of Avnir et al cannot take the place of evidence in the record.

It is noted that the Response above should not be construed as an invitation to file an after final declaration. See MPEP 715.09 [R-3].

E. Applicant argues on pages 12-13 of the Remarks that the claimed invention displays unexpected results, as presented in Example 3.

However, the data presented in the Examples is based on experimental procedures which are not commensurate in scope with the instant claims for the following reasons:

i. Example 3, which relies upon Examples 1-2, uses PGS, which is not required by the instant claims, and which is formed from TMOS in methanol, requires HCl, and proceeds at a specific temperature (Example 1). The instant claims are not limited to methanol, and do not require HCl or the temperature of Example 1.

ii. Example 3 also depends on Example 2, which requires a specific concentration of PGS, and also requires HCl, sodium phosphate at a specific pH, and PBS. None of these reagents are required by the instant claims.

iii. The spots of Example 3 are limited to a PMMA slide having a poly(methyl acrylate) coating (Example 2). The claims are not limited to this embodiment.

iv. The spots of Example 3 are formed at 80% humidity at room temperature and form a protein chip. The instant claims do not require this humidity and are not limited to protein chips.

Therefore, the method having the alleged unexpected results is not commensurate in scope with the instant claims. See MPEP 716.02(d)[R-2].

F. Applicant argues on page 13 of the Remarks that Experiments 3-5 show that the spots are transparent, have no cracks, and are stable for more than 6 months.

However, as noted above, Experiments 3-5 are not commensurate in scope with the instant claims.

In addition, Figure 2 of Kim et al teach the gels are transparent. Kim et al also teach additives help avoid cracks (page 336, column 1, last paragraph).

Further, Avnir et al teach the gels are stable (column 2, lines 25-50) for weeks (Examples, Section A). Thus, the prior art teaches the alleged unexpected benefits.

G. Applicant argues on page 13 of the Remarks that the cited prior art does not teach hemispherical spots.

However, as noted above Avnir et al do teach in lines 20-30 of column 3 that three dimensional shapes (e.g., rods, discs, cubes), and that the glassy gel spots are "in any shape." The courts have found that changes in shape are obvious. Thus, spherical three dimensional shape of the spots of the instant claim is an obvious variant of the three dimensional spots Kim et al in view of Avnir et al.

H. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., placement of many spots on the array) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the

specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

I. Applicant argues on page 13 of the Remarks that the invention allows uniform signal intensity.

However, Kim et al teach uniform signal intensity (i.e., fluorescence; page 336; second column, first full paragraph).

Thus, contrary to Applicant's assertions on page 13 of the Remarks, the alleged unexpected results are all contemplated by the cited prior art.

J. Applicant's remaining arguments regarding Simon et al and the dependent on page 14 of the Remarks rely on arguments set forth to address the alleged deficiencies of Kim et al and Avnir et al. Since these arguments were unpersuasive for the reasons discussed above, the claims remain rejected.

Conclusion

13. No claim is allowed.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert T. Crow whose telephone number is (571)272-1113. The examiner can normally be reached on Monday through Friday from 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave T. Nguyen can be reached on (571) 272-0731. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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